

**DAHLGREN DIVISION
NAVAL SURFACE WARFARE CENTER**

Dahlgren, Virginia 22448-5100



NSWCDD/MP-03/24

**RECORD OF PUBLIC MEETING FOR OPERATIONAL
TEST OF PULSED FAST NEUTRON ANALYSIS (PFNA)
CARGO INSPECTION SYSTEM AT YSLETA PORT OF
ENTRY COMMERCIAL CARGO FACILITY, EL PASO,
TEXAS**

BY JAMES SPACCO (SENSOR CONCEPTS & APPLICATIONS, INC.)

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PROGRAM OFFICE)**

SYSTEMS RESEARCH AND TECHNOLOGY DEPARTMENT

MARCH 2003

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FOREWORD

This document summarizes a public meeting held in connection with the environmental assessment conducted as part of the operational test of the Pulsed Fast Neutron Analysis (PFNA) Cargo Inspection System at Ysleta Port of Entry Commercial Cargo Facility located in El Paso, Texas. The meeting was held in El Paso, Texas, on 14 January 2003 to inform the public about the project and to provide a forum for citizens and public officials to voice their concerns.

PFNA technology will be used for determining the presence of contraband, drugs and weapons, etc., in cargo containers and trucks. This technology measures the elemental contents (e.g., oxygen, nitrogen, etc.) within volume segments of a scanned object. These measurements are used to generate three-dimensional "maps" of the object's elemental composition. The amounts and relative concentrations of key elements are used to identify specific substances of interest (e.g., explosives, narcotics, etc.). A system has been designed to use this technology for inspecting vehicles, such as trucks and tractor trailers.

Approved by:

A handwritten signature in black ink, appearing to read "R. Neal Cain", with a stylized flourish at the end.

R. NEAL CAIN, Deputy Department Head
Systems Research and Technology Department

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PURPOSE

This document summarizes a public meeting held in connection with the Environmental Assessment conducted as part of the operational test of the Pulsed Fast Neutron Analysis Cargo Inspection System (PFNA-CIS).

SUMMARY

A public meeting was held in El Paso, Texas on 14 January 2003. The purpose of the meeting was to inform the public about the project and to provide a forum for citizens and public officials to voice their concerns.

BACKGROUND

In the post 9/11 World, American citizens recognize, more than ever, that protection of national borders is the foremost responsibility of government. In the age of global terrorism, the biggest defensive challenge is identifying security threats before damage can be done.

Threats can be of many forms, but most agree that the materials needed for terrorism and drug dealing will likely enter the country hidden in the cargo that routinely crosses the border every business day. Non-Intrusive Inspection Systems allow those who guard the border to examine cargoes without having to physically unload the cargo containers.

A large number of Non-Intrusive Inspection Systems are deployed at ports of entry around the United States. While helping to make the inspection process more effective, current technology has shortcomings. Many of the current systems pass x-rays or gamma rays through the inspected vehicles and their cargoes. To discover potential contraband, the system operator must recognize it by its density or unique shape. All of today's systems require a high degree of operator interaction looking at visual images to determine whether more detailed investigation of a particular load is warranted.

Pulsed Fast Neutron Analysis (PFNA) is a radiation-based method that has been developed into a Non-Intrusive Inspection Technology. This technology was designed to determine the presence of contraband and indicate its precise location with no operator input. By automatically detecting the proportions of specific chemical elements within the cargo container, the system alerts enforcement personnel when a match is made with target compound "fingerprints." PFNA has been successfully demonstrated in a laboratory setting using a limited range of cargo. Yet, to be useful in the war against terrorism and drugs, the technology must perform well in real life conditions. Simulating the variety of cargo, vehicles, and operating conditions encountered at a port of entry in a laboratory is of limited value. The only way to definitively determine the utility of the technology (detection capability, throughput, "false alarm" rate, etc.) is to subject it to the actual field conditions.

Members of the U.S. Congress recognized that moving a promising technology from the laboratory to the field could only happen after successful operational testing. Hence, Congress

appropriated funds and provided specific direction to the Department of Defense to conduct a real-life test of the technology.

Based on a review of candidate locations having a high volume of incoming commercial traffic, the Ysleta Commercial Cargo Facility in El Paso, Texas was identified as the best test site. Under the proposed action, the government will construct a test facility (approximately 9 months) and operate it with the commercial stream-of-commerce (for a maximum period of 6 months).

In accordance with Section 102 [42 USC § 4332(2)(C)] of the National Environmental Policy Act (NEPA), the Department of Defense is preparing an Environmental Assessment for the proposed action. An Environmental Assessment was required to provide information on any potential impacts to the human and natural environment that may result from the proposed action. A public meeting was planned as part of the process to identify areas of investigation for the assessment.

PUBLICATION OF THE MEETING

The meeting was announced in the *El Paso Times* weekly for the month preceding the meeting. Copies of the announcements are presented in Appendix A.

Letters announcing the meeting were sent to potential stakeholders in mid-December 2002. Two different letters were sent. One letter included an attachment that described the project. The other letter did not include the attachment because it was a follow-up to an earlier letter, which had had the attachment. Both letters were translated into Spanish for addressees in Mexico.

Samples of the announcement letters are shown in Appendix B. Addressees for the letters are identified in Appendix C.

CONDUCT OF THE MEETING

Meeting attendees were encouraged to register on a sign-in sheet at the entrance to the meeting room. A list of attendees, including personnel supporting the project in an official or business capacity, is shown in Appendix D. A total of 47 people were at the meeting.

The entire meeting was videotaped. Additionally, a court stenographer was present to record and transcribe the meeting. A translator was also present who provided Spanish translation via dedicated sets of headphones that were made available to the audience. Annotated copies of the presentation were made available for the hearing impaired or others if they desired a copy.

The program manager, Dr. Stephen Haimbach, acted as the master of ceremonies. After giving some administrative remarks, Dr. Haimbach delivered a 20-minute presentation. A copy of the presentation is shown in Appendix E.

At the conclusion of the presentation, copies of written questions were collected from the audience and distributed to members of a four-person panel consisting of:

- **Leslie A. Braby**—Leslie A. Braby holds a Ph.D. in Radiological Sciences. Dr. Braby is a research professor of Nuclear Engineering at Texas A & M University. He holds a Ph.D. in Radiological Physics. His main area of expertise is radiation dosimetry with secondary interest is biophysics. Dr. Braby is a member of the National Council on Radiation Protection and Measurements and the International Committee on Radiation Units and Measurements.
- **Peter Ryge**—Peter Ryge holds a Ph.D. in Nuclear Physics. Dr. Ryge is Ancore Corporation's Vice President of Engineering. He has over 20 years experience in instrumentation development and experimental work, especially using nuclear techniques in nondestructive measurements. He is a member of the American Physical Society and the Institute of Electrical and Electronic Engineers.
- **Richard T. Whitman**—Richard T. Whitman is the Radiation Safety Officer for the U.S. Customs Service. Mr. Whitman has had radiation safety training with the Army, Navy, Oak Ridge and Georgetown University, including dosimetry, neutron work, hospital radiation, and shielding.
- **P. T. Wright**—P. T. Wright is the director of U.S. Customs Service field operations for West Texas and New Mexico.

Following a break, the meeting resumed. Either the member of the audience who submitted it or Dr. Haimbach read each written question. Dr. Haimbach asked one or more members of the panel to address the question. The written questions and the submitter's name (if provided) are presented in Appendix F.

A roving microphone was made available to members of the audience to clarify their questions or to ask follow-up questions.

A transcript of the entire meeting is included as Appendix G.

APPENDIX A
NEWSPAPER ANNOUNCEMENTS OF THE MEETING

VERIDIAN INFORMATION SOLUTIONS

6066 LEESBURG PIKE, SUITE 400

FALLS CHURCH, VA 22041

AD # 872897

LINES 58

COST: \$147.10

PUBLISHERS AFFIDAVIT

STATE OF TEXAS
COUNTY OF EL PASO

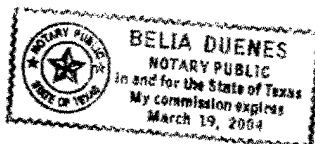
Before me, a Notary in and for El Paso County, State of Texas, on this day personally, appeared TERRIE CARTER who states upon oath that she is the ASSISTANT CLASSIFIED MANAGER of the EL PASO TIMES, a daily newspaper published in the City and County El Paso, State of Texas, which is a newspaper of general circulation and which has been continuously and regularly published for the period of not less than one year in the said County of El Paso, and that he was such upon the EL PASO TIMES.

That the LEGAL copy was published in the EL PASO TIMES for the date(s) of such follows 1 DAY(s) to wit 12/19, 2002.

Signed

Subscribed and sworn to before me,
This 19TH day of DECEMBER, 2002.

Belia Duenes



PUBLIC MEETING
ANNOUNCEMENT
The Department of Defense in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six-month, operational test of a Pulsed Fast Neutron Analysis Cargo Inspection System at the Yuleta Commercial Cargo Facility in El Paso, Texas. The Department of Defense, in accordance with Section 302 (42 USC 4332) of the National Environmental Policy Act is preparing an Environmental Assessment for the construction of the test facility (approximately 9 months) and its operation during the test period (a maximum of 6 months).
An open meeting has been scheduled to present a summary of the project. The meeting will take place from 7:00 - 9:00 PM, Tuesday, 12 January 2003 at the Holiday Inn, 8055 Gateway West Boulevard, El Paso, Texas 79925. The hotel is centrally located and directions can be obtained by calling the hotel directly at 915.778.8411. During the meeting responsible government and industry personnel will be available to answer questions.

VERIDIAN INFORMATION SOLUTIONS

6066 LEESBURG PIKE, SUITE 400

FALLS CHURCH, VA 22041

AD # 872899

LINES 58

COST: \$142.10

PUBLISHERS AFFIDAVIT

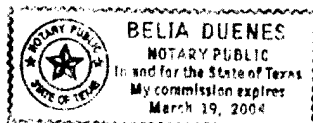
STATE OF TEXAS
COUNTY OF EL PASO

Before me, a Notary in and for El Paso County, State of Texas, on this day personally appeared TERRIE CARTER who states upon oath that she is the ASSISTANT CLASSIFIED MANAGER of the EL PASO TIMES, a daily newspaper published in the City and County El Paso, State of Texas, which is a newspaper of general circulation and which has been continuously and regularly published for the period of not less than one year in the said County of El Paso, and that he was such upon the EL PASO TIMES

That the LEGAL copy was published in the EL PASO TIMES for the date(s) of such follows 1 DAY(s) to wit 12/26, 2002

Signed

Subscribed and sworn to before me.
This 26TH day of DECEMBER, 2002.



**PUBLIC MEETING
ANNOUNCEMENT**
The Department of Defense in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six month operational test of its Pulsed Fast Neutron Analysis Cargo Inspection System at the Yuleta Commercial Cargo Facility in El Paso, Texas. The Department of Defense in accordance with Section 102 (2) USC, 4332 (c) of the National Environmental Policy Act is preparing an Environmental Assessment for the construction of the test facility (approximately 6 months) and its operation during the test period (a maximum of 6 months). An open meeting has been scheduled to present a summary of the project. The meeting will take place from 7:00 - 9:00 PM, Tuesday, January 2003 at the Holiday Inn Gateway West Boulevard, El Paso, Texas 79925. The hotel is centrally located and directions can be obtained by calling the hotel directly at 915-778-5677. During the meeting, responsible government and industry personnel will be available to answer questions.

VERIDIAN INFORMATION SOLUTIONS

6066 LEESBURG PIKE, SUITE 400

FALLS CHURCH, VA 22041

AD # 872900

LINES 58

COST: \$142.10

PUBLISHERS AFFIDAVIT

STATE OF TEXAS
COUNTY OF EL PASO

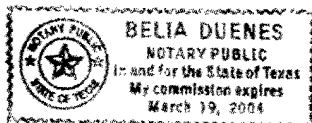
Before me, a Notary in and for El Paso County, State of Texas, on this day personally, appeared TERRIE CARTER who states upon oath that she is the ASSISTANT CLASSIFIED MANAGER of the EL PASO TIMES, a daily newspaper published in the City and County El Paso, State of Texas, which is a newspaper of general circulation and which has been continuously and regularly published for the period of not less than one year in the said County of El Paso, and that he was such upon the EL PASO TIMES.

That the LEGAL copy was published in the EL PASO TIMES for the date(s) of such follows 1 DAY(s) to wit 01/02, 2003.

Signed

Subscribed and sworn to before me,
This 2ND day of JANUARY, 2003.

Belia Duenes



PUBLIC MEETING
ANNOUNCEMENT
The Department of Defense in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six-month, operational test of a Pulsed Fast Neutron Analysis Cargo Inspection System at the Yuleta Commercial Cargo Facility in El Paso, Texas. The Department of Defense, in accordance with Section 102 (42 USC 4332 (2)(C)) of the National Environmental Policy Act is preparing an Environmental Assessment for the construction of the test facility (approximately 9 months) and its operation during the test period (a maximum of 6 months).
An open meeting has been scheduled to present a summary of the project. The meeting will take place from 7:00 - 9:00 PM, Tuesday, 14 January 2003 at the Holiday Inn, 6655 Gateway West Boulevard El Paso, Texas 79925. The hotel is centrally located and directions can be obtained by calling the hotel directly at 915.778.6411. During the meeting, responsible government and industry personnel will be available to answer questions.

VERIDIAN INFORMATION SOLUTIONS

6066 LEESBURG PIKE, SUITE 400

FALLS CHURCH, VA 22041

AD # 872901

LINES 58

COST \$142 10

PUBLISHERS AFFIDAVIT

STATE OF TEXAS
COUNTY OF EL PASO

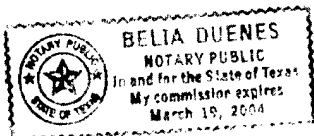
Before me, a Notary in and for El Paso County, State of Texas, on this day personally, appeared TERRIE CARTER who states upon oath that she is the ASSISTANT CLASSIFIED MANAGER of the EL PASO TIMES, a daily newspaper published in the City and County El Paso, State of Texas, which is a newspaper of general circulation and which has been continuously and regularly published for the period of not less than one year in the said County of El Paso and that he was such upon the EL PASO TIMES

That the LEGAL copy was published in the EL PASO TIMES for the date(s) of such follows 1 DAY(s) to wit 01/09, 2003.

Signed

Subscribed and sworn to before me,
This 9TH day of JANUARY, 2003

Belia Duenes



**PUBLIC MEETING
ANNOUNCEMENT**
The Department of Defense in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six-month operational test of a Purvis Fast Neutron Analysis Cargo Inspection System at the Yuleta Commercial Cargo Facility in El Paso, Texas. The

Department of Defense in cooperation with Section 105 of USC 4327.2(c) of the National Environmental Policy Act is preparing an Environmental Assessment for the construction of the test facility (approximately 6 months) and its operation during the test period (approximately 6 months). An open meeting has been scheduled to present a summary of the project. The meeting will take place from 7:00 - 8:00 PM, Tuesday, 14 January 2003 at the Holiday Inn, 6650 Gateway West Boulevard El Paso Texas 79925. The hotel is centrally located and directions can be obtained by calling the hotel directly at 915.774.6111. During the meeting, reasonable government and industry personnel will be available to answer questions.

APPENDIX B
SAMPLE LETTERS ANNOUNCING THE MEETING

Appendix B

Sample Letters Announcing the Meeting

Two letters were used to inform people of the meeting. One letter included a summary of the project as an attachment. A sample of one of these letters is presented on page B-4 through B-6.

The other letter followed a previous letter, which had had the attachment. A sample of this letter is presented on page B-7.

For addressees in Mexico, both letters were translated into Spanish.



Information Solutions Division

6066 Leesburg Pike

Suite 400

Falls Church, Virginia 22041

Tel: 703.998.8332

Fax: 703.931.0275

www.veridian.com

12 December 2002

Greater El Paso Chamber of Commerce
10 Civic Center Plaza
El Paso, Texas 79901

Attachments: (1) Project Summary for Test of Pulsed Fast Neutron Analysis Cargo Inspection System at the Ysleta Commercial Cargo Facility

Dear Sir/Madam :

The Department of Defense (DoD) in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six-month, operational test of a Pulsed Fast Neutron Analysis (PFNA) Cargo Inspection System at the Ysleta Commercial Cargo Facility in El Paso, Texas. An overview of the project is contained in the attached summary.

PFNA is a non-intrusive, radiation-based interrogation technology that images and identifies the contents of various sizes and types of unoccupied vehicles by using a neutron beam. Gamma rays are produced that are specific to the elements in the vehicle. Using the known "gamma ray fingerprints" of contraband materials, the system can indicate their presence and location within the vehicle.

The Department of Defense, in accordance with Section 102 [42 USC § 4332(2)(C)] of the National Environmental Policy Act (NEPA) is preparing an Environmental Assessment for the construction of the test facility (approximately 9 months) and its operation during the test period (a maximum of 6 months). An Environmental Assessment is required to provide information on any potential impacts to the human and natural environment that may result from the test. Veridian is under contract to collect information and draft the Environmental Assessment.

An open meeting has been scheduled to present a summary of the project. The meeting will take place from 7:00 - 9:00 PM, Tuesday, 14 January 2003 at the Holiday Inn, 6655 Gateway West Boulevard, El Paso, Texas 79925. The hotel is centrally located and directions can be obtained by calling the hotel directly at 915-778-6411. During the meeting, responsible government and industry personnel will be available to answer questions.

Sincerely,

W. F. Snow
Veridian Information Solutions

Making a Difference in Areas That Make a Difference

Project Summary for
Test of Pulsed Fast Neutron Analysis Cargo Inspection System
at the Ysleta, Texas Border Station

Introduction

In its counter-terrorism and counter-drug efforts, the Federal government has invested considerable resources into developing technologies for detecting explosives, narcotics or other contraband hidden among the freight imported into the United States. Radiation-based, non-intrusive inspection systems, such as X-ray and gamma ray, have been in use for several years by Federal Government agencies. A related technology, called Pulsed Fast Neutron Analysis (PFNA), was developed several years ago for cargo inspection. PFNA is designed to directly and automatically detect and measure the presence of specific materials, such as cocaine or explosives, which may have been hidden within the vehicle. PFNA technology uses pulses of neutrons as the radiation source to non-intrusively examine packages and containers for suspect materials. While PFNA has been successfully demonstrated in a laboratory setting, it has yet to be tested in an operational environment.

The Department of Defense (DoD) in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six-month operational test of a PFNA system at the Ysleta/Zaragoza Border Station in Ysleta, Texas. Ysleta is next to the Rio Grande River just southeast of the city of El Paso. Ysleta was selected as the test location principally because it had space available (no additional land purchase was required) and sufficient commercial traffic.

The test facility will consist of a building (approximately 220 feet by 60 feet) housing the PFNA equipment and several smaller structures for electronic equipment and operators.

Inspection Process

Vehicles will be selected for inspection from the routine stream of commerce and will be directed to the corridor-like entrance of the test facility. The driver will leave the vehicle and walk to a designated waiting area located at the other side of the PFNA building. A self-powered towing machine will slowly pull the unoccupied vehicle through the facility and past the scanning device. Once all safety checks are verified, the vehicle is scanned with the neutrons. The pulsed beam moves up and down while the vehicle slowly passes by to ensure that all of the contents are inspected.

Many of the neutrons pass through the vehicle unaffected and are stopped by the shield walls of the corridor. Some of the neutrons hit individual atoms, subsequently giving off a gamma ray of a specific frequency that is characteristic of a chemical element. Sensors located along the walls of the corridor detect the quantities for each of the specific frequencies of gamma rays for the short period of time of each pulse of neutrons. The system's electronics and computers compile

the gamma ray information to determine the properties of individual material locations within the vehicle. For the chemical makeup of specific explosives and narcotics, the computers automatically alert operators of the presence of these substances. The PFNA system generates three-dimensional images of the target materials on computer monitors to help pinpoint the location of suspect materials for U.S. Customs operators.

Radiation Properties

While the neutron generator used in PFNA systems does not contain radioactive material, the neutron production process does produce a trace amount of radioactive material. Specifically, a small amount (less than 1/100th of the levels allowed by the EPA regulations) of the radioisotope tritium (radioactive hydrogen) is a byproduct of the process, which is vented to the atmosphere.

The neutrons produce radioactive isotopes of some of the atoms within the vehicle. This may increase the level of radioactivity of scanned cargo materials. Computer modeling has shown that the level of induced radioactivity is of little consequence to human health. Residual radioactivity measurements will be made during the test to confirm the absence of significant levels of radioactivity.

For safety, personnel are shielded from radiation by staying out of the equipment area during operations. The facility's walls are designed to prevent all but minute amounts of radiation from leaving the area. X-rays and gamma rays are produced both by the fast moving neutrons themselves as they collide with atoms, and the neutron producing equipment. X-rays and gamma rays are both forms of ionizing radiation, which by virtue of their high energy, can convert molecules into charged ions, and poses an increased risk of cancer with excessive exposure. Visible light, infrared light, microwaves, and radio waves are non-ionizing forms of electromagnetic radiation because of their relatively lower energies.

It is believed that the PFNA inspection system is safe, with exposures to radioactive materials and ionizing radiation to the general public and US Customs Service personnel well below Federal and State Standards. The facility design, including radiation shielding, will be designed to ensure that levels of exposure will be statistically indistinguishable from local area background.



Information Solutions Division

6066 Leesburg Pike

Suite 400

Falls Church, Virginia 22041

Tel: 703.998.8332

Fax: 703.931.0275

www.veridian.com

XX December 2002

«Address1»

Dear «Title» «LastName»:

As noted in my 24 September 2002 letter to you, the Department of Defense in cooperation with the United States Customs Service and the Transportation Security Administration plans to conduct a six-month, operational test of a Pulsed Fast Neutron Analysis (PFNA) Cargo Inspection System at the Ysleta Commercial Cargo Facility in El Paso, Texas.

An open meeting has been scheduled to present a summary of the project. The meeting will take place from 7:00 – 9:00 PM, Tuesday, 14 January 2003 at the Holiday Inn, 6655 Gateway West Boulevard, El Paso, Texas 79925. The hotel is centrally located and directions can be obtained by calling the hotel directly at 915-778-6411. During the meeting, responsible government and industry personnel will be available to answer questions.

Sincerely,

W. F. Snow
Veridian Information Solutions

Making a Difference in Areas That Make a Difference

APPENDIX C
ADDRESSES FOR LETTERS ANNOUNCING THE MEETING

The Honorable Phil Gramm
370 Russell Senate Office Building
Washington, DC 20510-4302

The Honorable Kay Bailey Hutchison
284 Russell Senate Office Building
Washington, DC 20510-4302

The Honorable Silvestre Reyes
Texas – 16th, Democrat
1527 Longworth HOB
Washington, DC 20515-4316

The Honorable Ben Nighthorse Campbell
Chairman, Subcommittee on Treasury,
Postal Service, and General Government,
Committee on Appropriations
380 Russell Senate Office Building
Washington, DC 20510

The Honorable Byron Dorgan
Ranking Minority Member, Subcommittee
on Treasury, Postal Service, and General
Government, Committee on Appropriations
713 Hart Senate Office Building
Washington, DC 20510

Ernest J. Istook Jr.
Oklahoma – 5th, Republican
B307 Rayburn HOB
Washington, DC 20515-6028

Steny Hoyer
Maryland – 5th, Democrat
1705 Longworth House Office Building
Washington, DC 20515-2005

The Honorable Paul H. O'Neill
U.S. Secretary of the Treasury
1500 Pennsylvania Avenue, NW
Washington, DC 20220

The Honorable Norman Y. Mineta
U.S. Secretary of Transportation
400 7th Street, SW
Washington, DC 20590

The Honorable Donald H. Rumsfeld
US Secretary of Defense
1000 Defense Pentagon
Washington, DC 20301-1000

FDA Commissioner
U.S. Food and Drug Administration
5600 Fishers Lane
Rockville, MD 20857-0001

The Honorable Jane F. Garvey
Administrator, Federal Aviation
Administration
800 Independence Avenue, SW
Washington, DC 20591

The Honorable John Magaw
Undersecretary
Transportation Security Administration
400 Seventh Street SW
Washington, DC 20590

The Honorable John P. Walters, Director
Office of National Drug Control Policy
750 11th Street, NW
Washington, DC 20503

Dr. Richard A. Meserve
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Ms. Colleen M. Kelley
President National Treasury Employees
Union
901 E Street NW, Suite 600
Washington, DC 20004-2037

Justin R. Ornsby
Executive Director
Rio Grande Council of Governments
1100 N. Stanton, Suite 610
El Paso, Texas 79902

Scott Armeý
GSA Greater Southwest Regional
Administrator
819 Taylor Street
Fort Worth, TX 76102

W. Leighton Waters
Assistant Regional Administrator
Greater Southwest Region Public Buildings
Service
819 Taylor Street
Fort Worth, Texas 76102

Carlos Ramirez, Commissioner
United States Section
International Boundary and Water
Commission
4171 N. Mesa, Suite C-310
El Paso, TX 79902-1441

Belinda L. Collins Ph.D.
Director
Office of Standards Services
NIST, Southwest Region
7920 Elmbrook Drive, Suite 102
Dallas, Texas 75247-4982

OSHA Area Director
El Paso District Office
Federal Building C
700 E. San Antonio, Room C-408
El Paso, Texas 79901

U.S. Department of Labor
Occupational Safety and Health
Administration
Lubbock Area Office
Federal Office Building
1205 Texas Avenue, Room 806
Lubbock, Texas 79401

Assistant Regional Administrator
For Technical Support and Outreach
Programs
U.S. Department of Labor
Occupational Safety and Health
Administration
525 Griffin Street, Room 602
Dallas, Texas 75202-5024

Darrin Swartz-Larson
Office Director
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Roy Gilyard
Director, Metropolitan Planning
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Presidente Municipal de Ciudad Juarez
Presidencia Municipal
Avenida Francisco Villa #950 Norte
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Arq. Carlos Aguilar García
Director de Desarrollo Urbano
Y Director General de Proyectos Ejecutivos
Para el Equipamiento Urbano
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Camara Nacional de Comercio y Serviocios
Aves. Henry Dunant y Manuel Diaz
Anillo Circuito del Pronaf
Ciudad Juarez, Chihuahua, Mexico

Lic. Ruben Luna Caldera
Delgado Regional de Caminos y Puentes
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Subdelegacion Regional de Chihuahua y
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Director General de Evaluacion
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Honorable Patricio Martinez Garcia
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Air Sea Intl
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Brown Alcantar & Brown Inc
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Cordova Brokerage International Inc
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El Paso, TX 79927

Daniel B Hastings
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DBA Emery Customs Brokers
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Expeditors Intl. of Washington
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APPENDIX D
PEOPLE PRESENT AT THE MEETING

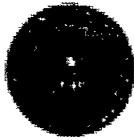
People Present at the Meeting

Name	Organization
Art Alvarado	Texas Department of Health
Stacy Barnett	United Parcel Service
Ron Bentley	Veridian
John Bland	General Services Administration
Leslie Braby	National Council on Radiation Protection and Measurements
Mary Caraveo	Court Stenographer
Tom Cassidy	Sensor Concepts & Applications
Dave Clifton	Galaxy Scientific Corp
Earl Cook	Occupational Safety & Health Administration
Jorge Dieppa	Translator
Joe Gatto	Transportation Security Administration
Bob Geyer	Quality of Life El Paso
Steve Haimbach	DoD Counterdrug Technology Development Program Office
Victor Jimenez	Immigration and Naturalization Service
Bill Kuehne	Sensor Concepts & Applications
Roger Maier	US Customs Service
Jessica Martinez	Occupational Safety & Health Administration, El Paso Office
Monica Marquez	UPS Supply Chain
Victor Marquez	JOBE
Laureano Martinez	UTEP student
Ray Mendoza Jr.	City of El Paso
Edward McCormick	McCormick Architecture LLC

People Present at the Meeting (Continued)

Name	Organization
Karl McElhaney	Office of Congressman Reyes
Eric McQueen	US Customs Service
Susan Monroe	Occupational Safety & Health Administration
Jim Mrozack	Ancore
Paul Nicholas	US Customs Service
Mike Noarte	PSC NWSU
Kevin Odenborg	National Treasury Employees Union
Manuel Rubio	USIBWC
Peter Ryge	Ancore
Lisa Schaub	General Services Administration
Robert Shiner	Sensor Concepts & Applications
Patrick Smith	McCormick Architecture LLC
Mario Solano	Occupational Safety & Health Administration, Assistant Area Director
Jimmy Spacco	Sensor Concepts & Applications
Belinda Subramanian	Green Party
Michael Torra	Office of Congressman Reyes
Gerwan Villela	HDC Teleco
Royce Walters	US Customs Service
Rick Whitman	US Customs Service
P T Wright	US Customs Service

APPENDIX E
PRESENTATION GIVEN AT THE MEETING



Pulsed Fast Neutron Analysis (PFNA)

Operational Evaluation

Stephen P. Haimbach, Ph.D.

***Deputy Program Manager
Non-Intrusive Inspections***

Agenda

Introduction


Presentation

Submission of Questions and Statements

Break

Questions and Answers 14 January 2003


Slide 1



Department of Defense
Countering Technology Development Program


Pulsed Fast Neutron Analysis

at the Velsiz Port of Entry




For the next week you can submit further questions or concerns to the e-mail or fax numbers below:

Jspacco@scainc.biz
410-593-9907 - Fax



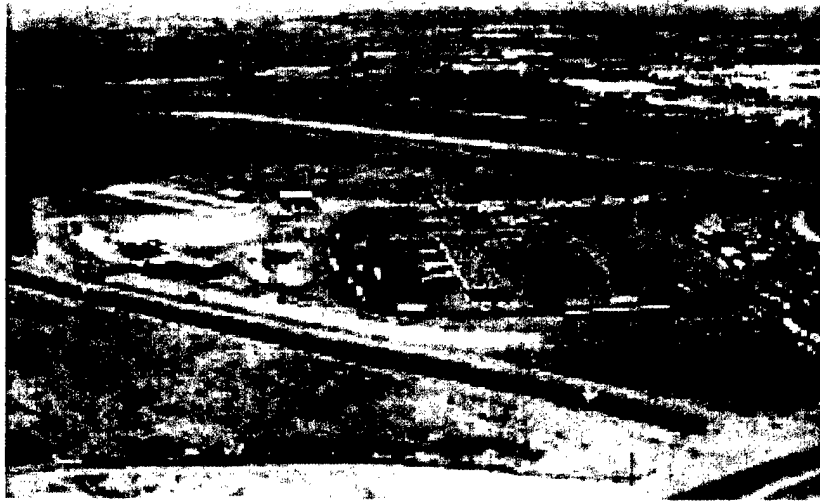
Transportation Security Administration

US Customs Service



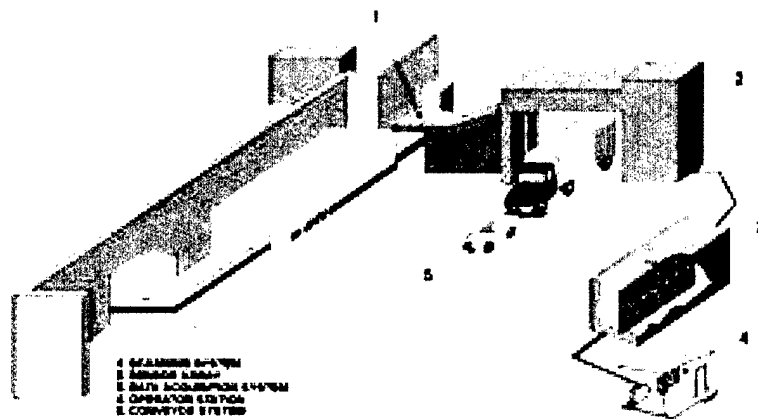
Slide 2

YSLETA POE



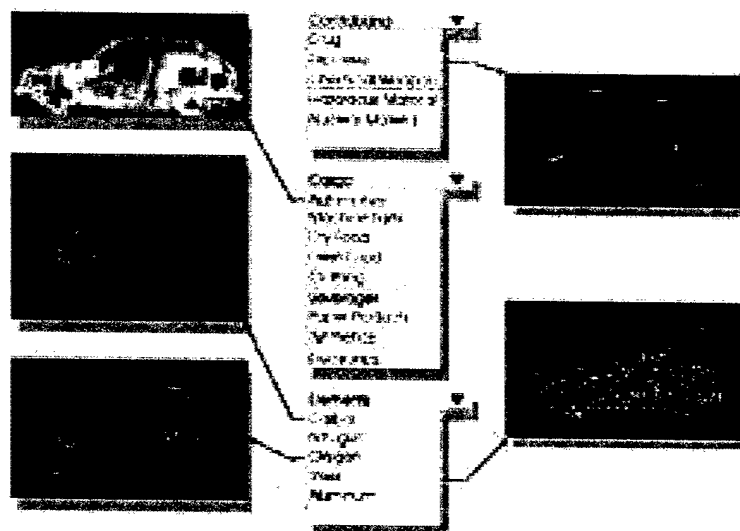
Slide 3

PFNA Hardware Configuration



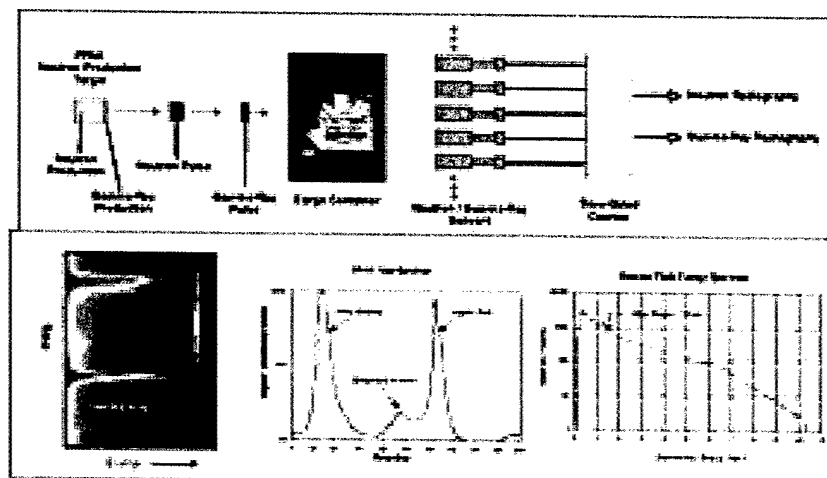
Slide 4

How ACI Detects Material Signatures in Cargo and Vehicles



Slide 5

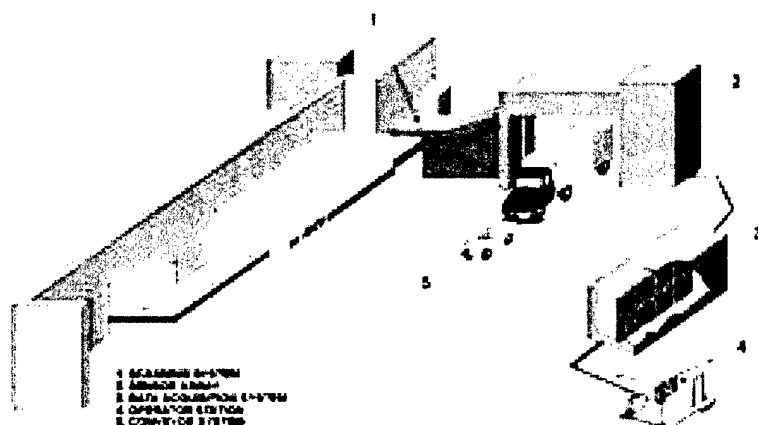
PFNA NEUTRON/GAMMA-RAY RADIOGRAPHIC SYSTEM



Radiographic Time and Energy Spectrum

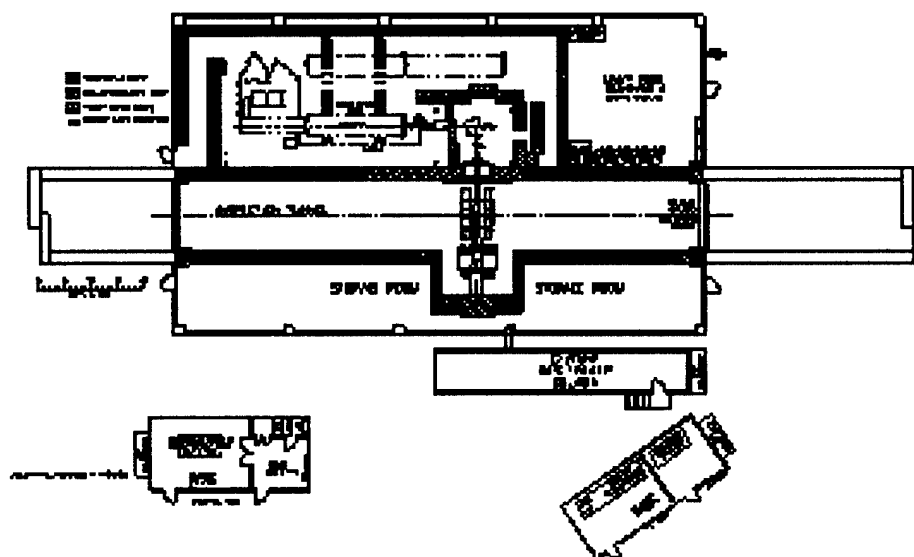
Slide 6

PFNA Hardware Configuration



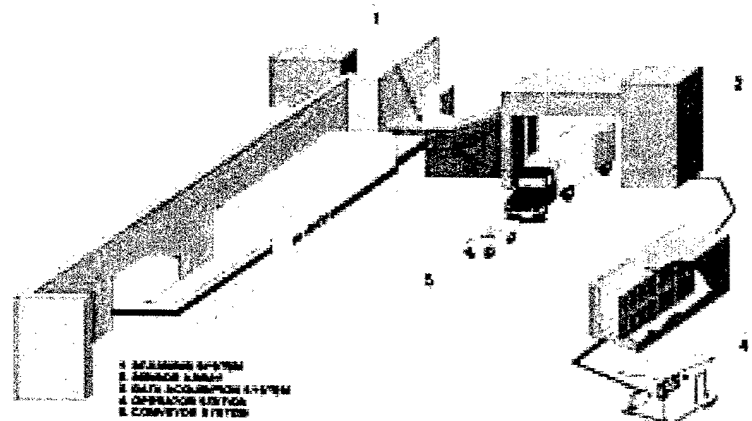
Slide 7

Ancore Cargo Inspector Facility Notional Concept



Slide 8

PFNA Hardware Configuration

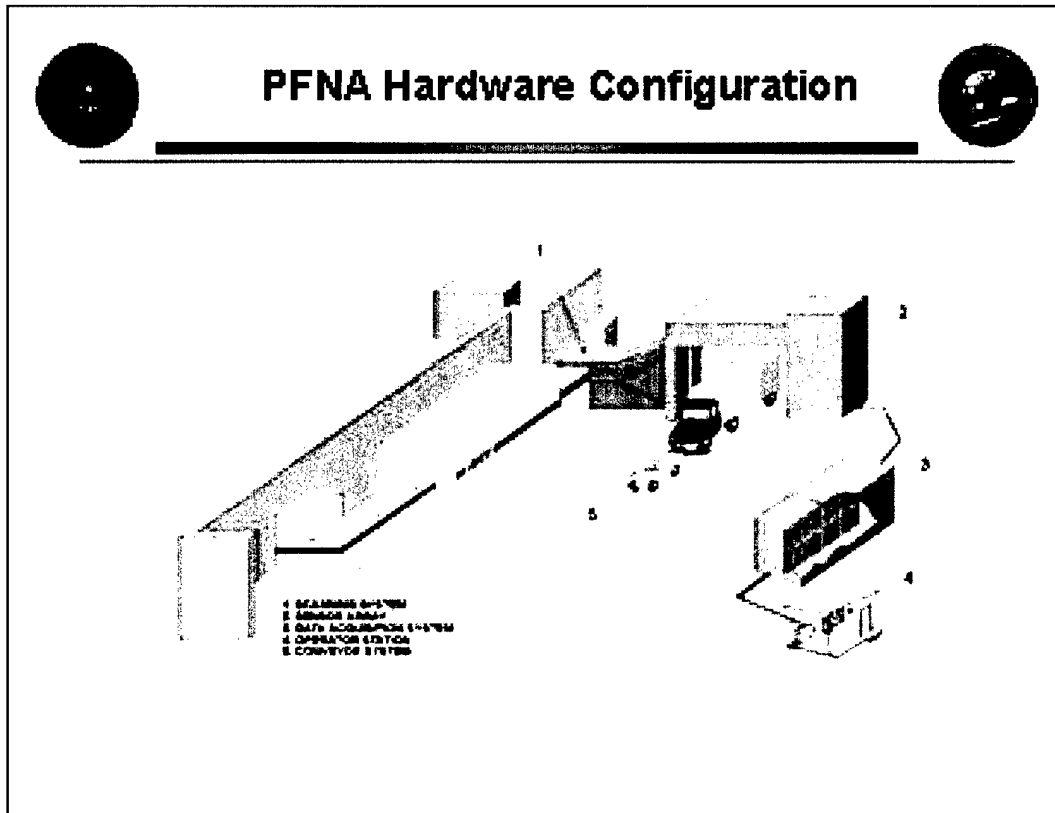


Slide 9

PFNA Field Testing Goals

- **Operational Field Test to Quantify the Effectiveness of PFNA as a Non-Intrusive Inspection System**
- **Metrics include**
 - **Detection Effectiveness**
 - **Threats and quantities**
 - **Probability of Detection, Probability of False Alarm, Throughput**
 - **Operational Compatibility**
 - **Operational Reliability analysis**
 - **Operational Cost estimate**
- **Use Stream Of Commerce Cargoes**

Slide 10



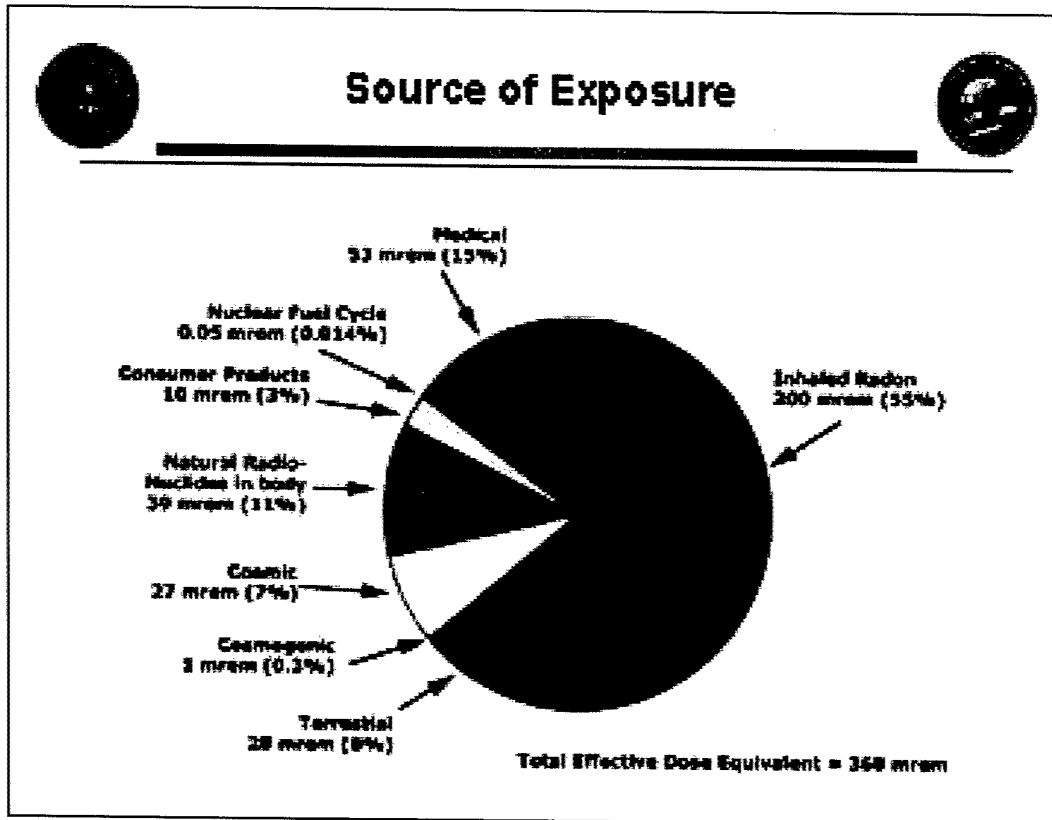
Slide 11

Impact Areas Studied For The Environmental Assessment

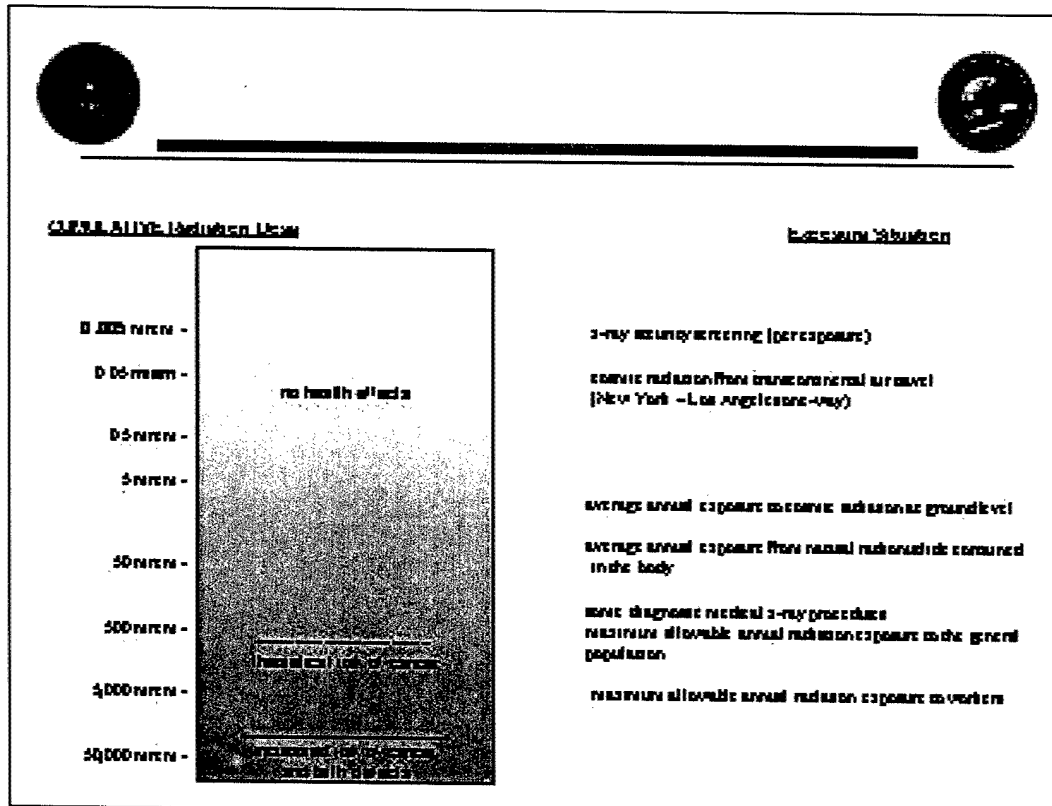
- Geology
- Soil
- Surface & Storm Water
- Air
- Vegetation & Wildlife
- Noise
- Land Use
- Infrastructure & Utilities
- Housing
- Recreation Areas
- Transportation
- Historical & Cultural Resources
- Hazardous Waste
- Environmental Justice
- Radiation

The slide displays a list of impact areas studied for the environmental assessment. The list is organized into two columns. The first column includes Geology, Soil, Surface & Storm Water, Air, Vegetation & Wildlife, Noise, Land Use, and Infrastructure & Utilities. The second column includes Housing, Recreation Areas, Transportation, Historical & Cultural Resources, Hazardous Waste, Environmental Justice, and Radiation.

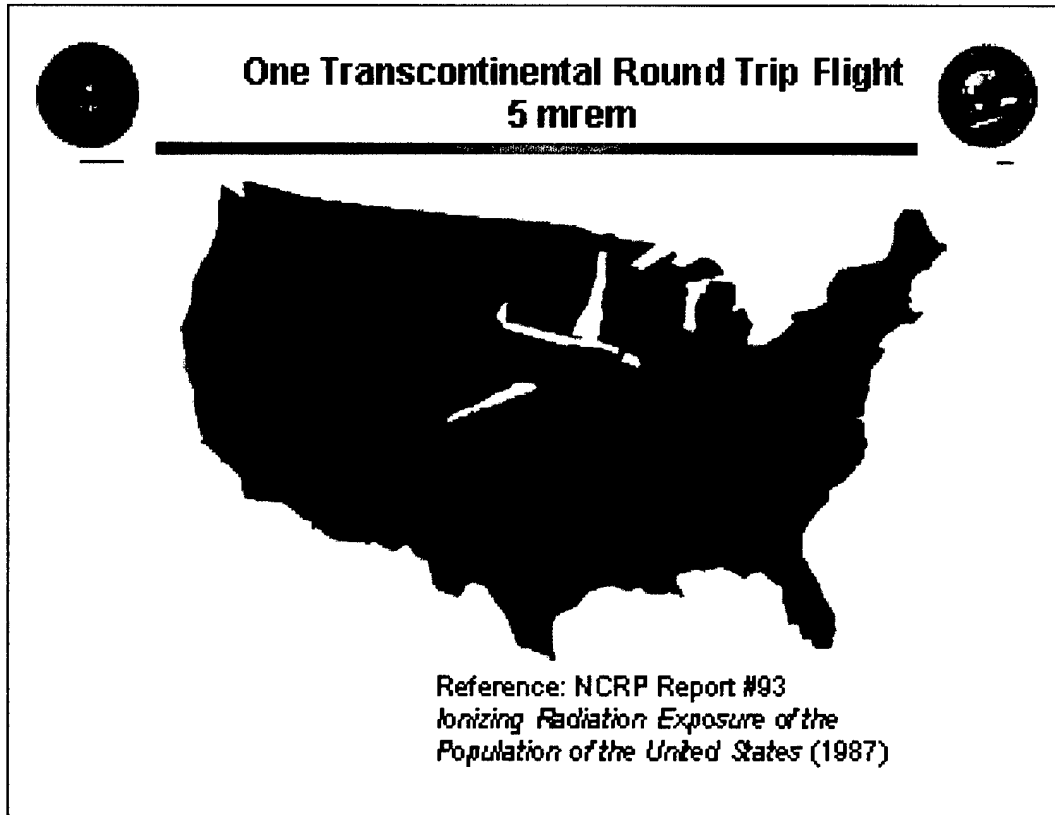
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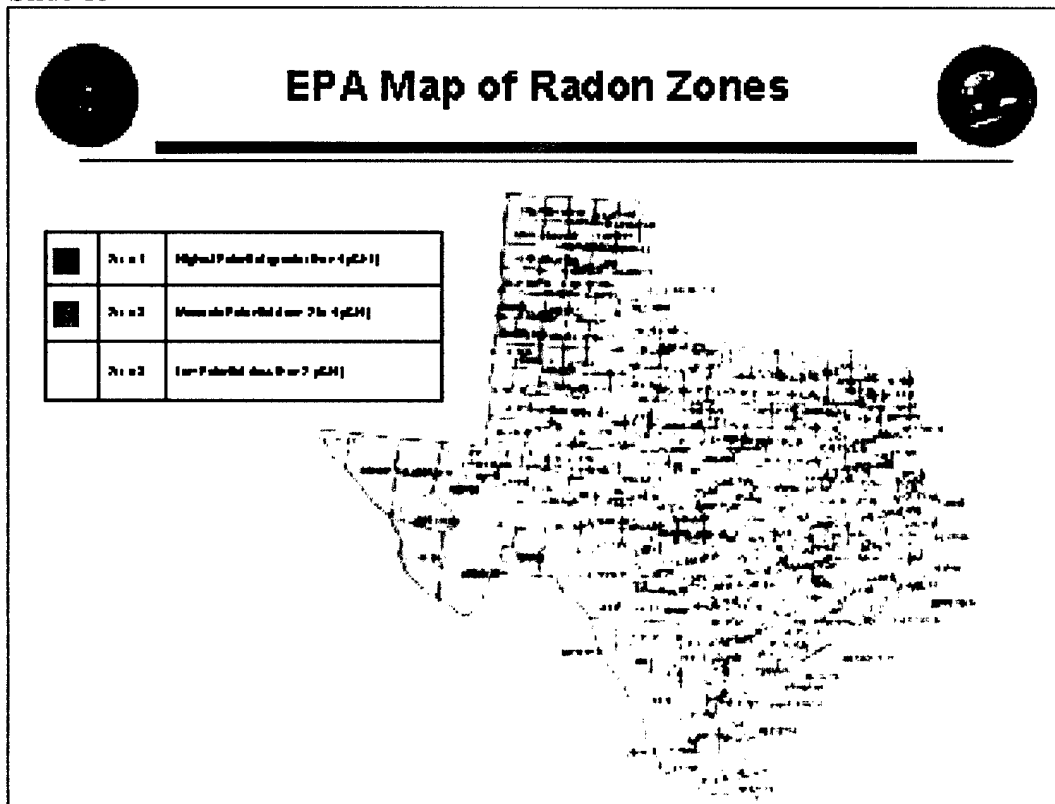
Slide 13




Slide 14



Slide 15




Slide 16



Department of Defense
विश्वविद्यालय विभाग, विभाग, विभाग, विभाग


Global Fast Neutron Analysis

Global Fast Neutron Analysis




For the next week you can submit further questions or concerns to the e-mail or fax numbers below:

Jspacco@scaic.biz
410-593-9907 - Fax



Transportation Security Administration

US Customs Service



Slide 17

APPENDIX F
WRITTEN QUESTIONS SUBMITTED AT THE MEETING

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

- 1) Commodities that generate radiation,
Can they affect the test results?
i.e. smoke detectors
Will any of the components can be damaged?

2) _____

3) _____

Name: UPS - SCS, Inc. Organization: _____

Address: _____ Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) If no hazardous materials are brought onto the test site to be run through the PFNA screening facility, how will we know whether the system could detect such materials once made operational? Are the hazardous material substitutes sufficient?

2)

3)

Name: Michael Torrey

Organization: Rep. Silvestre Reyes

Address: _____

Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) Are there any specific commodities (other than food) that can be prone to damage due to this type of inspection?

2) Scanning time mentioned of 5 minutes, compare to present time frame experience in the inspection process, could you please review the current process in comparison with the benefits of the proposed process.

3) Is the type of conveyance going to hinder those items inspected in this process?
Ex. full truck load vs. ocean container

Name: UPS Supply Chain Sol. Organization: _____

Address: _____ Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) what would be the dose to a "stowaway" in
the cargo container from the gamma/x-rays produced
from the neutron irradiation of the cargo. (mrem)
and from the neutron exposure (mrem)?

2) How long does the induced radioactivity of the
cargo that has been irradiated to no longer
be radioactive (max time)?

3) Will the shielding of the facility, built at
Ysleta become radioactive? if so for how
long?

Name: Earl Cook

Organization: CSHA

Address: _____

Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) What is the timetable to begin testing?

2) Does a FONSI clear the way for testing to begin?

3) Were there any other environmental assessments conducted, and if so, what were the results?

Name: Karl McElhenny

Organization: Congressman Reyes

Address: _____

Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) WHAT IS THE expected DATE for
THE system to be operational

2) _____

3) _____

Name: Victor Jimenez Organization: INS

Address: _____ Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) In the brief, DR. Haimbach stated that the radiation levels ~~have~~ for the PFNA system have been set at or below one tenth ($1/10$) of the regulatory limits.

Could the panel explain what the regulatory limits are?

2) _____

3) _____

Name: Kevin Odenborg Organization: National Treasury Employees Union

Address: _____ Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

1) Even small doses of Gamma rays can be harmful to any living organism, large doses can be fatal. Is it is not radiation accumulated in the human body? How can you say Gamma rays are not harmful in small doses?

2) Is it not true that radiation is accumulated in the human body? And, this is unnecessary, & dangerous and costly measure.

3)

Name: Mary Subramanian, RN Organization: Green Park

Address: _____ Telephone: _____

Project Summary Meeting For the Test of the
Pulsed Fast Neutron Analysis Cargo Inspection System
To Be Constructed on the United States Customs Services Ysleta Commercial Cargo Lot
January 14, 2003

Question(s) for the panel:

- 1) GAMMA RAYS ARE THE MOST PENETRATING FORM OF ELECTROMAGNETIC RADIATION. HOW CAN YOU WITH A CLEAR CONSCIENCE STATE THAT THE SYSTEM IS NO MORE DANGEROUS THAN THE X-RAY MACHINES AT THE AIRPORT?

2)

OF WHAT MATERIALS WILL THEY BE CONSTRUCTED?
HOW THICK WILL THE WALLS BE AND IN THE BUILDING WHERE THE GAMMA RAYS ARE UTILIZED? IT TAKES SEVERAL MM OF LEAD TO STOP GAMMA RAYS.

- 3) WHY WAS EL PASO SELECTED AS THE TESTING SITE FOR THE PFNE? I WOULD BE INTERESTED IN REVIEWING YOUR ENVIRONMENTAL JUSTICE SECTION DUE TO EL PASO'S LOW PER CAPITA INCOME AND LARGE HISPANIC POPULATION.

Name: BOB GEYER

Organization:

QUALITY OF LIFE EL PASO

Address:

Telephone:

APPENDIX G
TRANSCRIPT OF THE MEETING

1
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PULSED FAST NEUTRON ANALYSIS
PUBLIC CONFERENCE

Location: Holiday Inn (Airport)
6655 Gateway West

Date: January 14, 2003

Time: 7:00 p.m.

Court Reporter: Maria Caraveo, CSR/RPR
(28468)

1 A P P E A R A N C E S

2 Stephen P. Haimbach, Ph.D. (Moderator)
3 Department of Defense
4 17320 Dahlgren Road
5 Dahlgren, VA 22448-5100

6 Panel Members:

7 P.T. Wright
8 Director of Field Operations, U.S. Customs Service

9 Richard T. Whitman
10 Radiation Safety Officer, U.S. Customs Service

11 Leslie A. Braby, Ph.D.
12 Research Professor, Nuclear Engineering
13 Texas A&M University

14 Peter Ryge, Ph.D.
15 Vice President of Engineering, Ancore Corporation

16

17

18

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25

1 DR. HAIMBACH: Good evening and thank you
2 for coming to this informational meeting. My name is
3 Dr. Stephen Haimbach and I'm the program manager for
4 this project. There will be headphones available in
5 the back that will carry a Spanish translation for the
6 rest of this presentation.

7 This evening I will be making a short
8 presentation. We will then have a break, where you can
9 submit questions and comments about this project.
10 There are forms available, we're asking you to submit
11 them in writing so we can include them as part of the
12 environmental assessment. After the break, the members
13 of the panel and I will address your concerns.

14 I'm with the Department of Defense
15 Counterdrug Technology Development Program Office.
16 This office is responsible for developing and
17 demonstrating technology and specific counterdrug
18 system solutions. To enhance the counterdrug
19 capabilities of the Department of Defense and as
20 appropriate, civilians from all enforcement agencies,
21 while remaining consistent with the National Drug
22 Control Strategies goals of enforcing the nation's laws
23 and shielding the U.S. borders from the drug traffic.

24 We're performing this project in
25 conjunction with the United States Customs Service and

1 the Transportation Security Administration. This
2 project is being performed under funding that is
3 directly mandated by Congress to evaluate this example
4 of the next generation of inspection technology under
5 operational conditions in the stream of commerce at the
6 Ysleta port of entry shown in this photograph. The
7 truck entry point can be seen here and the PFNA site
8 will be roughly over on this area.

9 In the counterterrorism and counter drug
10 efforts, the federal government is investing
11 considerable resources into developing technologies for
12 detecting explosives, narcotics and other contraband
13 hidden amongst the freight imported into the United
14 States. Radiation-based, nonintrusive inspection
15 tools, such as x-ray and gamma ray based systems, have
16 been used for several years by federal agencies. These
17 types of systems are important because they enable the
18 inspection of cargos without the time-consuming,
19 expensive and potentially dangerous process of
20 unloading vehicles for manual inspection.

21 In order to validate a new technology's
22 utility it is necessary to test it in an operational
23 environment. That is to say, under the same conditions
24 that will exist, should this technology eventually be
25 deployed for general use by federal agencies. The

1 specific technology that we're planning to evaluate in
2 this program is a Pulsed Fast Neutron Analysis System
3 or PFNA. This acronym will be used frequently so let
4 me repeat, PFNA stands for Pulsed Fast Neutron
5 Analysis. Shortly I will explain what that means.

6 This technology has been developed by the
7 Ancore Corporation as a vehicle inspection system, the
8 Ancore Cargo Inspector. PFNA has been developed over
9 the last several years for cargo inspection. PFNA is
10 designed to directly and automatically detect and
11 measure the presence of specific materials, such as
12 cocaine or explosives which may be hidden within a
13 vehicle. PFNA technology uses pulses of neutrons to
14 nonintrusively examine packages and containers for
15 suspect materials. While PFNA has been successfully
16 demonstrated in a laboratory setting, it has yet to be
17 tested in an operational environment.

18 Unlike other inspection systems, the PFNA
19 approach is designed to automatically test and
20 precisely locate drugs, explosives and other contraband
21 concealed in fully loaded containers, trucks or
22 automobiles. The PFNA's detection process is material
23 specific. Materials are identified by the unique
24 elemental signatures and because the inspection process
25 takes place automatically, the results of inspection do

1 not rely on operator interpretations.

2 The presence of specific materials are
3 detected and measured through the constituent elements
4 by exposing them to short bursts of fast, subatomic
5 particles called neutrons. Interaction between a fast
6 neutron and the elemental components of a cargo produce
7 signals called gamma rays that are specific to an
8 element. Sensors around the inspected object detect
9 these signals. The element and number of signals
10 gives -- excuse me, the energy and number of signals
11 gives the elemental signature and the quantity. The
12 time of arrival pinpoints the location of these
13 elements in the cargo.

14 Many elements can be directly detected,
15 including carbon, nitrogen, oxygen, silicon, chlorine,
16 aluminum and iron. The elemental signals are analyzed
17 by the system computer and combined into unique
18 material specific signatures of contraband or hazardous
19 materials. This slide is an overview of the process.
20 The next slide is a schematic representation of the
21 system.

22 Most of the equipment is contained inside
23 a shielded building such as the one here, this being
24 the shield. The operation of the system is generally
25 as follows: The trucks selected for inspection are

1 directed to the facility. Trucks are loaded onto an
2 automatic Automated Ground Vehicle or AGV by the driver
3 who then goes to a vehicle -- a driver waiting area.
4 The system's operator, in this case a U.S. Customs
5 inspector, enters relevant data about the truck and its
6 manifest in this computer and initiates a scan. The
7 AGV conveys the truck through the inspection pulse.
8 Process of the scan -- progress of the scan is
9 monitored by the system's operator. By the time the
10 scan is completed, which may take two to five minutes,
11 the results are ready to view and the truck is towed
12 out of the premises. The AGV releases the truck and
13 proceeds to the pick-up area to load the next truck to
14 scan. The driver takes control of his truck and leaves
15 the port when given the okay.

16 This slide shows some of the questions
17 that we're going to answer by this operational
18 evaluation. Because the vast majority of trucks
19 entering the United States from Mexico do not carry any
20 contraband, false alarms are a concern. To ensure that
21 the false alarm rate is sufficiently low, most of the
22 trucks for this test will be selected from the existing
23 stream of commerce. This is important so that the test
24 is looking at cargos that are representative of normal
25 commerce. The ability to detect contraband has been

1 evaluated at the vendor's facility. To validate the
2 system's performance under operational conditions, we
3 will include test loads into the process. The
4 materials used in these test loads will be in all cases
5 validated simulants of the contraband that's being
6 evaluated.

7 Let me say again, no hazardous material
8 will be going onto the port in conjunction with this
9 test. Also, all test loads will be routed through the
10 port and never crossing into Mexico. Safety is a
11 serious concern for all systems that use radiation to
12 inspect vehicles and we clearly recognize the need to
13 control the amount of radiation to which people are
14 exposed to.

15 Three general situations have been
16 considered in the design of the facility and the
17 operational evaluation. One, the U.S. Customs
18 inspectors and the system's operators. Two, the
19 general public around the facility, mainly the truck
20 drivers. And three, stowaways in the trucks. For all
21 concerned, a facility's acceptance test will ensure
22 that all designed safety requirements have been met
23 prior to commencing with the operational evaluation.

24 For customs inspectors and operators, the
25 system has been designed with shieldings and systems

1 interlocks to assure any operation -- any radiation
2 exposure to them is below that allowed by OSHA and all
3 other U.S. and international organizations that impose
4 regulations on radiation producing machines. Radiation
5 badges will be provided and monitored to check the
6 system's safety performance.

7 The PFNA system is completely housed in a
8 building that's constructed out of radiation blocking
9 materials. As long as individuals are outside of the
10 inspection building, their exposure is no greater than
11 with any of the nonintrusive inspection systems
12 currently used on our borders. Truck drivers will
13 always be outside of the inspection building. The
14 system's operational procedures, extensive safety laws,
15 and extensive modeling and analysis to ensure that even
16 if a stowaway should remain in the truck during the
17 scan, the radiation they would receive would be
18 substantially below the limits that are considered safe
19 by U.S. Government organizations that regulate
20 radiation proof machines and the International
21 Commission on Radiological Protection.

22 An environmental assessment is being
23 prepared to address the wide range of environmental
24 concerns shown on this slide. The impact on the
25 environment as a result of the building and

1 infrastructure requirement for the PFNA inspection
2 system will be the same as any port expansion with a
3 modest building placed on it, except in the following
4 areas: air quality, hazardous waste and radiation.
5 The impact on air quality was investigated and no
6 significant impact was determined to result from the
7 PFNA inspect system. The impact of potential hazardous
8 waste was studied and it, too, was found had no impact
9 on the environment. The impact from radiation was
10 studied and no significant impact was found, but
11 because this is a radiation producing system, and the
12 level of public concern with anything concerning
13 radiation, I will go into some detail regarding that
14 part of the assessment.

15 A person's exposure to radiation is
16 measured in units called millirems. The millirem
17 measures the effects of radiation on the human body
18 much as degrees measure temperature. In the United
19 States a person's average exposure to radiation is
20 about 360 millirems per year. Roughly 300 millirems of
21 this average is attributed to natural sources of
22 radiation, and the remaining 60 millirems from man-made
23 sources, primarily medical procedures.

24 It is important to know that 80 percent
25 of the radiation we're exposed to comes from such

1 natural sources such as sunlight, soil and certain
2 types of rocks. Cosmic rays filtering out to the
3 atmosphere and Radon gas filtering out to the soil are
4 sources of natural radiation. This radiation is called
5 background radiation. It is present everywhere all the
6 time and varies considerably from location to location.
7 In addition, people are exposed to radiation from
8 man-made sources such as color televisions, smoke
9 detectors, computer monitors, medical x-rays. These
10 sources account for less than 20 percent of the total
11 radiation exposure. But there's no difference between
12 natural radiation and its effects and man-made
13 radiation and its effects.

14 The PFNA-based inspection system is
15 designed to be safe and comply with radiation safety
16 standards and regulations. It is designed to meet the
17 concept of radiation protection known as ALARA, "As Low
18 as is Reasonably Achievable." To meet this criteria,
19 the system is not only below the mandated levels, but
20 is operated in a manner that ensures that the public
21 exposure is as low as possible.

22 In general, for the PFNA system, we have
23 set these levels at or below one tenth of the
24 regulatory limits. To protect workers and members of
25 the public, the system's shielding interlocks and other

1 safety features are designed in accordance with
2 recommendations of the International Commission of
3 Radiological Protection. These recommendations have
4 been adopted into the regulations of most countries of
5 the world.

6 PFNA inspection does not harm inspected
7 items or leave hazardous residual radioactivity.
8 Results from extensive analysis have led the U.S. Food
9 and Drug Administration to approve the system for use
10 in inspecting cargo containing food during this
11 evaluation. Being near the PFNA inspection building is
12 just as safe as being near an x-ray machine at the
13 airport. You would receive ten times as much radiation
14 flying in a commercial passenger airplane for an hour,
15 about a half a millirem, than from standing next to the
16 PFNA inspection building for an hour a 20th of a
17 millirem.

18 Background radiation varies considerably
19 from location to location. For example, people living
20 in the northeast region of Washington State receive a
21 dose of about 1,700 millirem per year, mostly from
22 radiation that occurs naturally in rocks and soil. It
23 is not uncommon for a person to receive far more than
24 the average 360 millirem per year. Things that can
25 affect a particular person's annual radiation exposure

1 level is airplane travel, dental and medical x-rays and
2 occupation.

3 I have dedicated considerable time to the
4 discussion of radiation safety. This is because while
5 the system is safe, there's always concern by the
6 public regarding any type of radiation. Again, the
7 system is safe. In summer, as directed by Congress,
8 the Department of Defense, United States Customs
9 Service and Transportation Security Administration are
10 jointly performing an operational evaluation of the
11 PFNA cargo inspection system manufactured by the Ancore
12 Corporation at the Ysleta Texas Port of Entry. This
13 test utilizes the existing stream of commerce and test
14 loads using safe, simulated target materials. The
15 system's design and operation procedures will provide a
16 safe environment for people and cargos associated with
17 the system.

18 Thank you. I will now have a short break
19 and the forms that -- were they handed out? We have
20 forms like we mentioned, we request that you submit
21 your questions in writing because we want to include
22 them in the environmental assessment. There's a place
23 for your name on there but it is not a requirement.
24 Also, if you have comments, they're more than welcome.
25 If you prefer them in Spanish, we have a translator who

1 can arrange so that I can understand because I do not
2 speak Spanish. And so there are a number of people
3 with those forms, if you would like to raise your hand
4 or whatever. As I said, we'll take a brief break so
5 you can pull them out. Make sure you keep one copy for
6 yourself and if you, for some reason, don't want to
7 read the question and just have me read it, that's fine
8 also. We're very open to whatever approach anyone
9 would like. So if we take about 15, 20 minutes to get
10 that done. Thank you.

11 (A recess was taken.)

12 DR. HAIMBACH: We have a portable mike in
13 the back so that those of you who prefer to read your
14 own question, you're more than welcome to do that. If
15 you prefer that I just read it from here, you can do
16 that. I will ask whoever presented the question to
17 come forward or raise their hand or whatever. First
18 one here is from UPS-SCS Incorporated. You want the
19 read your question?

20 AUDIENCE MEMBER: No, you go ahead and
21 read it.

22 MR. HAIMBACH: The question is,
23 commodities that generate radiation, can they affect
24 the test results, i.e. smoke detectors, or any of the
25 components be damaged? Excuse me, I got ahead of my

1 own schedule here. The members of the panel: First we
2 have P. T. Wright, who is the director of field
3 operations for West Texas/New Mexico. Mr. Ray oversees
4 the operations for ports in West Texas/New Mexico,
5 including El Paso. Secondly, is Mr. Richard Whitman.
6 He's the radiation safety officer for the U.S. Custom
7 Service. Richard has had radiation safety training
8 with the Army, Navy, Oak Ridge and Georgetown
9 University, including dosimetry, neutron work, hospital
10 radiation and shield. Then we have Leslie Braby, he
11 holds a Ph.D. in radiological sciences. Dr. Braby is a
12 research professor of nuclear engineering at Texas A&M
13 University. He olds a Ph.D. in radiological physics.
14 His main area of expertise is radiation dosimetry with
15 secondary interest in biophysics. Dr. Braby -- Braby?
16 Am I getting his name right? Braby, I'm getting his
17 name wrong, is a member of the National Council on
18 Radiation Protection and Measurements and the
19 International Commission on Radiation Units and
20 Measurement. And the last member of our committee is,
21 Peter Ryge who holds a Ph.D. in nuclear physics. Dr.
22 Ryge is the Ancore Corporation's vice president of
23 engineering. He has over 20 years experience in
24 instrumentation development and experimental work,
25 including using nuclear techniques in nondestructive

1 measurements. He's a member of the American Physics
2 Society and the Institute & Electricals Electronic
3 Engineers.

4 And just so that we don't -- I'll read
5 the question again. Commodities that generate
6 radiation, can they affect the test results, for
7 example, smoke detectors, and will any of the
8 components be damaged?

9 DR. RYGE: Items like smoke detectors
10 that are being shipped legally have very low levels of
11 radiation and will not cause our system any
12 difficulties. It will not affect the test results in
13 any way. And the second part about, will the
14 components be damaged. No, they will not. The
15 radiation level in the PFNA beam is very low, far below
16 that which can cause any radiation damage effects.

17 DR. HAIMBACH: There's some people that
18 write almost as well as I do. Is it Michael Torra? Do
19 you want to read.

20 MR. TORRA: No, you can go ahead --

21 DR. HAIMBACH: If no hazardous materials
22 are brought onto the test site to be run through the
23 PFNA screen facility, how do we know whether the system
24 could detect such materials, once made operational?
25 Are the hazardous materials sufficient? And who is it

1 on that one?

2 DR. RYGE: We are using simulated
3 explosives and drugs and other target items. These
4 simulants have been validated previously by testing at
5 our facility in California against actual explosives
6 and drugs that we've obtained through our local bomb
7 squad and through the cooperation of the government
8 agencies and the -- so, that's really the answer.
9 These materials have demonstrated that they are good
10 simulants for purposes of this technology. For
11 example, the explosive simulants contain the same
12 chemical elements that are in explosives. They are
13 simply combined -- physically combined rather than
14 chemically combined and so they will not blow up, even
15 though they contain the same components.

16 DR. HAIMBACH: U.P.S. Supply Chain? I'll
17 keep reading for you?

18 AUDIENCE MEMBER: Keep reading.

19 MR. HAIMBACH: Are there any specific
20 commodities, other than food, that can be prone to
21 damage due to this type of inspection?

22 DR. RYGE: The answer is no. There
23 are -- and you don't need to exclude food. The PFNA
24 inspection radiation level is very low and it doesn't
25 cause any damage.

1 MR. WRIGHT: And that, in fact, is where
2 we have the FDA letters, because we compare the energy
3 with all the other modalities that they have on
4 radiation.

5 DR. HAIMBACH: Scanning time mentioned of
6 five minutes compared to present time frame experience
7 in the inspection process. Could you please review the
8 current process in comparison with the benefits of the
9 proposed process.

10 MR. WRIGHT: The two nonintrusive
11 technologies currently in use by U.S. Customs at El
12 Paso's two cargo facilities, one is the truck x-ray and
13 the other is the gamma backup system. In the case of
14 backup system, it is about a seven-minute processing
15 time. For the truck x-ray is about a ten-minute
16 processing time. Operationally, we're targeting a
17 five-minute time window for this system, but anything
18 that's less than ten will be well within the scope of
19 what we're looking for in the test.

20 DR. HAIMBACH: Is the type of conveyance
21 going to hinder those items inspected in this process?
22 And the examples given, a full truckload versus an OSHA
23 container.

24 MR. WRIGHT: Again, the contractor is to
25 deliver a product that can currently scan all modes of

1 cargo, be it containerized, be it truck, be it bulk,
2 including POV vehicles as well.

3 DR. HAIMBACH: The next set of question
4 are from Earl Cook?

5 ADIENCE MEMBER: You may read it.

6 DR. HAIMBACH: What would be the dose to
7 a stowaway in a cargo container from the gamma ray
8 gamma/x-ray produced from a neutron radiation of the
9 cargo in millirem and for the neutron exposure in
10 millirem?

11 MR. WHITMAN: The design of this is to
12 keep exposures at or below 100 millirem. And the
13 reason that number was picked is because that's the
14 maximum level that members of the public are allowed to
15 be exposed to. Now, there are a whole lot of other --
16 also not mentioned is we intend to use a pre-screening
17 process to look for stowaways ahead of time where the
18 dose would be much, much lower. So this becomes
19 something of a model once the machine is built and we'd
20 like to have other modalities, but it does not appear
21 to be insurmountable nor does it appear to be medically
22 dangerous.

23 ADIENCE MEMBER: I just want to know.
24 You said a hundred millirem. Is that the total dose of
25 the stowaway we receive?

1 DR. HAIMBACH: That's the maximum.

2 ADIENCE MEMBER: Is that's the maximum
3 what's the actual millirem?

4 MR. HAIMBACH: The actual is about a half
5 and in the process of the initial development of the
6 system there are tests that we will run, badges and
7 such to determine exactly what the level is and -- but
8 the calculations I've seen are about half or less than
9 that.

10 ADIENCE MEMBER: You mentioned a hundred
11 millirem is the legal limit for the general public.
12 That's a hundred millirem per year, not per exposure?

13 MR. WHITMAN: That was just a starting
14 point.

15 DR. BRABY: The National Council on
16 Radiation Protection and Measurements studied that
17 problem extensively and the general feeling was that it
18 would be very unlikely that anyone would go through
19 that process twice. Part of the requirement for
20 operating the system is that anybody that is in a
21 container will obviously be detected. They will be
22 thoroughly informed of how they were detected and the
23 medical consequences, which are actually not
24 significant, but the fact that there was an exposure
25 and that it will certainly not be reasonable to repeat

1 that exposure. The assumption was that people would
2 only be exposed twice per year. Well, in fact,
3 probably over a lifetime less than an average of once
4 per year.

5 ADIENCE MEMBER: That would be exposure
6 from the gamma and the neutron?

7 DR. BRABY: The gamma component is very
8 small compared to the neutron component. The process
9 of producing gammas requires the absorption of the
10 neutron and that process is a low probability. So the
11 gamma component is down at the level that you can
12 count, but it doesn't really produce a significant
13 dose.

14 ADIENCE MEMBER: Thank you.

15 DR. HAIMBACH: Next question was, how
16 long does it take the induced radioactivity of the
17 cargo that has been radiated to no longer be
18 radioactive, maximum time?

19 MR. WHITMAN: The idea behind this is
20 that by the time the scan finishes going through the
21 building and comes to the outside, maybe all the
22 radiation will be decayed. In fact, most of it is gone
23 in seconds.

24 DR. BRABY: There are some other products
25 that produce low levels. We studied the production of

1 various radioisotopes, for example, sodium 24 and
2 evaluated the doses that would be produced by consuming
3 the products that have been scanned. All of those
4 doses turned out to be factors of thousands or hundreds
5 of thousands below any regulatory limits, but the
6 half-life of the most significant one is -- the most
7 significant one is probably sodium 24 because some
8 product contain a substantial amount of sodium and the
9 half life of sodium 24 is 15 and a half hours. So even
10 though that level is very low, by the time it reaches
11 its destination products are distributed and so forth,
12 the dose would have decayed even more than we
13 calculated.

14 DR. HAIMBACH: Will the shielding of the
15 facility built at Ysleta become radioactive, if so how
16 long?

17 DR. RYGE: We have a prototype system
18 that we have been operating in Santa Clara, California
19 for about eight years now doing various experimental
20 measurements of the tests and different configurations
21 and we have taken samples of the facility shielding and
22 had them analyzed for residual radioactivity and cannot
23 find any. That is, that there isn't any which is above
24 the natural background. So it's really not a problem.

25 ADIENCE MEMBER: Will the shielding at

1 this location be the same material as the shielding at
2 Santa Clara?

3 DR. RYGE: Yes it's basically concrete
4 and plastics that are used for shielding, so they're
5 basically the same.

6 DR. HAIMBACH: I had a Karl McElhaney,
7 did I get it right?

8 ADIENCE MEMBER: Close enough.

9 DR. HAIMBACH: What is the timetable to
10 begin testing?

11 MR. WRIGHT: We got that same question
12 twice. I had also another individual asked what is the
13 expected date for the system to be operating, so I'll
14 answer that both at the same time. We're looking at
15 the operational testing to begin about a year from
16 today, January 2004. That's the operational site.

17 MR. HAIMBACH: Next question. Does a
18 FONSI which is a, Finding of No Significant Impact,
19 which is the things that come out of the environmental
20 system, clear the way for testing to begin?

21 MR. WHITMAN: We have -- there's a large
22 panel of people that was not mentioned. You heard that
23 the different groups, Transportation Security Agency,
24 and U.S. Customs are all involved. In fact, GSA has
25 also been a part of this and other groups have been

1 pulled in from time to time for comment. In the
2 development of what's called an environmental
3 assessment, where before you build something you're
4 supposed to look at what are all the potential effects
5 from the list that you saw. Those are the lists that
6 come right out of EPA regulations. Normally, for this
7 particular item, because we expect low to no impact at
8 all, as you heard, it would stop with an environmental
9 assessment, and a public meeting like this is normally
10 not done for environmental assessment is usually done
11 internally. But because there's some mobile agencies
12 and a lot of hours and because it's a very new
13 first-of-a-kind technology in the field, everyone
14 thought that -- all of the principals that belonged to
15 these different agencies thought that this was the best
16 way to go and that's why we're here tonight.

17 DR. HAIMBACH: And in addition to all of
18 the environmental assessments, as he mentioned before,
19 that once the system is built, there will be a
20 acceptance test of that system to ensure that it has
21 met all the requirement of the safe regulation before
22 any testing would begin. So there are other steps
23 beyond that, too, that is working to make sure that we
24 have everything, including the public's input, as far
25 as designing the system to be very safe, but then

1 before we will do anything with it, where there's any
2 chance of people being around we will run an extensive
3 test of the system to make sure that it has met all of
4 those goals and requirements.

5 Third question here, were there any other
6 environment assessments conducted and if so, what were
7 the results?

8 ADIENCE MEMBER: In addition, just to EPA
9 that's ongoing, were there other analyses of it?

10 MR. WHITMAN: For this system?

11 ADIENCE MEMBER: Right.

12 MR. WHITMAN: There's a whole procedure
13 that's done and we have an environmentalist in our
14 office who's been part of this along with Dr. Paul
15 Nicholas in the back, who's a dedicated guy at the
16 Customs Headquarters. And there's a checklist that's
17 driven by EPA regulations, which is Title 40 of the
18 Code of Federal Regulations that follows that and we're
19 following that model. When we get done with it, this
20 is going on our location, part of the process is, we
21 have to pass it up to department level, Department of
22 the Treasury, where it is reviewed by a full-time
23 environmentalist, the chief of environment for the
24 Department of Treasury and that's to make sure that
25 there's not -- he doesn't have an interest in whether

1 we do this or not, he has an interest in doing the
2 right thing. So there's some checks and balances built
3 in this, too.

4 DR. HAIMBACH: The next question is from
5 Victor Jimenez. Have we already answered your
6 question?

7 MR. JIMENEZ: Yes.

8 MR. HAIMBACH: I'll read it anyway. What
9 is the expected date for the system to be in operation?
10 And as already mentioned, is January --

11 DR. HAIMBACH: And lastly, Kevin
12 Odenberg. Am I reading for you too? In the brief, Dr.
13 Haimbach stated that the radiation levels for the PFNA
14 system have been set at or below one tenth of the
15 regulatory limits. Could the panel explain what the
16 regulatory limits are?

17 DR. BRABY: Well, there are a number of
18 different regulatory limits depending on the individual
19 that is exposed, that the numerical value that's
20 probably most concerned here is the limit for the
21 general public and the recommendation there is a
22 hundred millirem per year. The exposure rates set --
23 established for the facility are less than 50 microrem
24 per hour and if you consider the absolute maximum kind
25 of situation, facility running essentially continuously

1 eight hours a day, 2,000 hours a year, that would get
2 you to the 100 millirem per year. But, in fact, no
3 system would operate continuously for that period of
4 time. No individual would be in that particular
5 location for all of those 2,000 hours. So in general
6 we utilize factors called occupancy factor, things of
7 that sort. And the 50 microrem per hour would lead to
8 much lower radiation exposures than the regulatory
9 limit. That's how that's calculated.

10 DR. HAIMBACH: There's one other question
11 on the white sheet. I'm not going to try to ruin
12 your -- would you like to ask the question yourself or
13 you like me to read it for you?

14 ADIANCE MEMBER: You do it. You're doing
15 a good job.

16 DR. HAIMBACH: Okay. I don't want to
17 have anybody feel that I impose on their validity to
18 make the statement themselves. Even small doses of
19 gamma rays can be harmful to any living organisms,
20 large doses can be fatal. How can you say gamma rays
21 are not harmful in small doses?

22 DR. BRABY: This is a complicated
23 problem, actually. The primary point is that at high
24 doses, yes, radiation exposure can be lethal, but in
25 case of radiation we're talking about an extremely wide

1 range and the levels that we are talking about for this
2 kind of facility, those levels for radiation protection
3 of the general public are below the level at which any
4 evidence for harmful effects can be detected. Now, we
5 utilize in the National Council of Radiation Protection
6 a linear model which assumes that you can measure an
7 effect at a high dose. The most cautious way to treat
8 that is to extrapolate in a linear fashion to zero dose
9 and in that case you can calculate that there was
10 potentially some harm at even a very low dose. That
11 harm however, is immeasurably small compared to the
12 harm that comes about just from breathing air and
13 eating food, because we all produce the same kind of
14 damage in our bodies from metabolizing our food as is
15 produced by ionizing radiation. So the levels are
16 extremely low. No harm can be detected in populations
17 that have been studied extensively to see if anything
18 could be picked out and there just isn't any specific
19 evidence.

20 DR. HAIMBACH: He has a second question,
21 you want me to go through that one first? And when I'm
22 done I'm going to be open to any additional questions.
23 So if someone has thought of something -- I have some
24 people who will be mainly writing it down so that we'll
25 keep it in the -- we'll enter it into our assessment.

1 Is it not true that radiation is accumulated in the
2 human body and this is an unnecessary, dangerous and
3 costly measure?

4 DR. BRABY: With respect to accumulation,
5 we really have two different things to worry about. We
6 have radiation and radioactivity. And, in fact, we
7 have a third thing, we have the biological consequence
8 of radiation. Radioactivity can be accumulated in the
9 body, but there's no radio activity generated by the
10 PFNA exposures to the person that's exposed to the
11 beam. And the amount that is produced by activating
12 food or pharmaceuticals and so forth, is, as I said,
13 hundreds of thousands of times below the level of any
14 concern. With respect to radiation itself, radiation
15 is like light, is photons or neutrons and they just
16 pass through us and keep on going and we don't
17 accumulate those.

18 We do however, accumulate, in some sense
19 at least, the damage that occasionally those particles
20 do when they pass through our bodies. So depending on
21 your background, you may be aware that one of the
22 issues is chemical damage and macromolecules, or rDNA,
23 for example, but in all cases that damage is repaired
24 by the same biological systems that repair the kind of
25 damage that's done by metabolizing food. So though

1 there's the theoretical possibility of accumulating
2 damage, in fact, the vast majority of it is repaired
3 and cells go on. Furthermore, of course, most cells
4 don't stick around for a long time. Those turn over,
5 so if a person receives an exposure one time, by the
6 time they came back, if they happen to come back, and
7 receive another exposure, they would be essentially
8 made up of a new set of cells anyway.

9 MR. WHITMAN: We expect people in the
10 beam to be an extremely rare -- and we don't really
11 expect it to happen. One is that we're not sneaking
12 this technology on the port, it's being analysed that
13 we're replacing this technology on the port. Secondly,
14 we're going to do a pre-scan of vehicles. Our own
15 employees and anyone else on the port will be
16 outside -- and there's some charts in back you can see
17 later -- are at a significant distance outside of a
18 fenced in area. And the reason for the fence isn't
19 really the radiation. The reason for the fence is so
20 that the automated ground vehicle, the tow vehicle,
21 that tows the truck through, doesn't hurt you. The
22 greater hazard here is the tow.

23 Also the way this thing is constructed,
24 the scanning happens in a tunnel, inside of a contained
25 tunnel, inside this building that's going to be put up.

1 It's shielded. There are no people in the building.
2 It's interlocked, there's lights and alarms and stops
3 just in case someone happened -- one of our employees
4 would --

5 DR. HAIMBACH: The cameras require you to
6 check in before you do anything.

7 MR. WHITMAN: Right. So we have lots of
8 ways of making sure and like we have all these other --
9 with all the other systems we have. We don't really
10 think it's likely that we'll expose anyone and we're
11 looking after all the what-ifs that we can think of.

12 DR. HAIMBACH: I believe there's still
13 one or two questions?

14 MR. GEYER: It came up about the
15 half-life of sodium is 15 hours and you said by the
16 time they reach their destination -- this isn't a
17 question I wrote down. This came up since your
18 comments -- but the half life is 15 hours and you said
19 that by the time it reaches its destination that
20 wouldn't be a problem, what if that destination is El
21 Paso and somebody's unloading this product within 30
22 minutes after crossing the border. How can you say
23 that?

24 DR. BRABY: That's a possibility,
25 obviously.

1 MR. GEYER: Very real possibility.

2 DR. BRABY: We calculated the dose rate
3 for various materials. We had to assume some period of
4 time for the typical time it would take a material to
5 reach consumers. In fact, where would you get a lot of
6 sodium. Well, it turns out the biggest single way that
7 you would get sodium would be as an intravenous
8 injection following an accident. The time that it
9 takes a package of intravenous saline solution to
10 travel through the distribution to the pharmacy, to a
11 hospital, and to an emergency medical technician, to
12 actually reach a patient is almost certainly more than
13 24 hours.

14 Other kinds of process and other
15 materials that might also involve sodium exposure
16 typically will have, even in the local market, a
17 substantial amount of time. Now, even if you assume
18 that the material is consumed immediately after
19 scanning, in the case of the sodium, that increases the
20 dose by a factor of about four, and that is still, as I
21 said, thousands of times less than the level that would
22 be of concern.

23 MR. GEYER: This would be the sodium in
24 foods also?

25 DR. BRABY: That would be the sodium in

1 food always, but there's very little foods that you
2 would consume that would have anything like the amount
3 of sodium in two liters of saline solution.

4 ADIANCE MEMBER: The FDA petition
5 specifically studied food with salt in it and the FDA
6 agreed with the petition and said that this would be
7 well below the levels of concern for food. So that
8 those numbers that Dr. Braby is talking about were a
9 part also of the data that was sent to the FDA and the
10 FDA has approved the system for food.

11 MR. GEYER: With NAFTA there's more and
12 more food coming across the border and I think that's a
13 concern that nobody really thought about, until you
14 mentioned it tonight. I certainly hope that is being
15 publicized to the public in El Paso for people that
16 have a lot of salt.

17 DR. BRABY: It had certainly been raised
18 by people before because the question was brought to
19 the NCRP as an issue to request an evaluation and, as I
20 said, the levels turned out to be extremely low. The
21 National Council on Radiation Protection and
22 Measurements, that group is a congressionally chartered
23 scientific advisory committee which provides advice on
24 radiation protection to most of the agencies of the
25 federal government. It's an all-volunteer

1 organization, essentially, scientists who happen to
2 have various kinds of expertise in the radiation area.
3 And the way the council operates, a committee will
4 typically write a report and that report will be
5 evaluated by all of members of the council.

6 DR. HAIMBACH: How many members is that?

7 DR. BRABY: I'm not sure if it's 100 or
8 105 this year.

9 MR. GEYER: The three questions that I
10 had written out -- first of all, my name is Bob
11 Geyer -- gamma rays are the most penetrating form of
12 electro magnetic radiation. How can you, with a clear
13 conscience, state that the system is no more dangerous
14 than the x-ray machines at the airport?

15 DR. BRABY: Well, in fact, the fact that
16 the radiation is more penetrating, means that per
17 particle passing through, it delivers less dose. So
18 the penetration and the amount of biological activity
19 that is produced, that is modified molecules and so
20 forth, are not directly related. The amount of
21 biological effect is related to the amount of energy
22 deposited by the radiation, and that requires actually
23 stopping the gamma rays that are produced in the Pulsed
24 Fast Neutron System are hopefully highly penetrating
25 because we want them to escape the container and be

1 detected so we can find out what was in the container.

2 MR. GEYER: But you did say earlier that
3 damage to the body once it passes through is something
4 to be concerned about and so -- isn't that correct?

5 DR. BRABY: Certainly at high doses, much
6 higher than the limit that is set for exposure of the
7 general public. There is evidence from cancer therapy,
8 for example, that there can be detrimental effects, but
9 at the low doses that are involved here, there's no
10 direct evidence of harmful effects. We simply base our
11 protection limits on a linear extrapolation which is an
12 extremely cautious way of going about it.

13 If one person takes a hundred aspirins
14 it's almost certainly made to be fatal. If a hundred
15 people take one aspirin each, none of us expect any
16 harmful effect. But if you'll apply that linear
17 extrapolation that we do for radiation, you would
18 assume that one person out of those hundred would die
19 of taking a single aspirin. The fundamental point is
20 that biological systems are far more sophisticated than
21 a linear extrapolation. The only reason we still use
22 the linear extrapolation is that we have not been able
23 to experimentally determine a better approximation and
24 in the absence of a better description of what is going
25 on, we take the simplest one, which is the linear

1 approach, which we think dramatically overestimates the
2 actual risk of low doses.

3 MR. GEYER: My second question was -- the
4 gentleman on the left somewhat addressed this
5 already -- but it was how thick would the walls be of
6 the building, where the gamma rays are utilized and
7 what materials would they be constructed. I believe
8 you said concrete and plastics?

9 DR. RYGE: Yes. It depends a little on
10 where in the facility and what in particular it is
11 shielding from in that location. The plastics that
12 were -- materials that contain a lot of hydrogen like
13 polyethylene, affect the shielding materials for fast
14 neutrons. Concrete is good because it's structurally
15 strong, relatively inexpensive, contains some hydrogens
16 and also contains heavier elements that are good for
17 stopping gamma rays, and the thickness is different
18 thickness in different locations in the building. At
19 the very highest level point it is going to be four to
20 five feet thick, but in most of the building it will be
21 much less than that.

22 MR. GEYER: I'm not a nuclear physicist
23 by any means, but my understanding was you would take
24 several millimeters of lead to control gamma rays.
25 That's what I've read. You're not using any of the

1 lead materials?

2 DR. RYGE: We are using some lead in
3 certain places, although it's more for preserving our
4 detection sensitivity. It takes many -- how much lead
5 it takes to stop electromagnetic radiation like gamma
6 rays depends very much on the energy. So a few
7 millimeters is plenty for typical low energy x-ray
8 systems, but you'd want more than that for this
9 purpose, but it's to our advantage to use concrete
10 here. It's just a design trade-off.

11 ADIANCE MEMBER: Can you clarify how much
12 gamma radiation is, this neutron radiation because in
13 reality --

14 MR. GEYER: Excuse me, when you said it's
15 to your advantage to use concrete rather than lead,
16 what did you mean by that? You mean the cost?

17 DR. RYGE: The cost and the --

18 MR. GEYER: I don't think that's a very
19 good reason right there.

20 MR. RYGE: It's a matter of how to
21 achieve the same effect. You can achieve the same
22 shielding effect with -- actually you can do better
23 with concrete against the mix of gamma rays and
24 neutrons, but it's also because it's mechanically
25 strong you can make a tall wall out of concrete,

1 whereas you really can't out of lead and it's every bit
2 as effective, if you use an appropriate quantity.
3 There's -- in terms of the shielding effect, this is
4 simply a matter of you have an equivalent for a given
5 gamma ray energy and intensity. You can achieve the
6 same degree of shielding with concrete as with a given
7 quantity of lead. It's just a matter of how much and,
8 of course, concrete is much less harmful
9 environmentally so --

10 MR. GEYER: Is this all addressed in the
11 environmental assessment? Is that issue addressed to
12 use concrete rather than lead? I just wonder if it's
13 in writing.

14 DR. BRABY: The shielding calculations
15 are done by standard procedures and there are tables
16 that give the amount of concrete that is equivalent to
17 a given thickness of lead. Or more specifically, there
18 are tables that give the amount of either concrete or
19 lead required to reduce the dose of a particular kind
20 of gamma ray by a certain amount.

21 MR. GEYER: Yes, sir, but is that
22 addressed in your environmental assessment is my
23 question for public reading?

24 DR. BRABY: The issue of radiation
25 protection is ensure that the doses to individuals and

1 to the public is below a certain level. The millirem,
2 microrem numbers that we've been talking about today
3 are the levels that you may consider equally affecting
4 the human body. That's what a millirem is all about.
5 It's talking about the effect on the human body.
6 Whether it's gamma rays or neutrons or x-rays, 50
7 microrems of radiation to the human body is the same,
8 regardless of -- that number is the same regardless of
9 the source or type of radiation. So what we have
10 addressed is that we will have sufficient shielding to
11 bring the level to 50 microrem of radiation at the
12 exterior of the building and it doesn't really matter
13 because that number is a number that's independent of
14 the type of radiation, gamma rays, neutrons, beta rays
15 or any of the other types of ionizing radiation.

16 MR. GEYER: No, my question still is,
17 does the environmental assessment address the fact that
18 you are going to use concrete, however thick it may be
19 as opposed to lead and what thickness this would be to
20 guarantee as ample protection as several millimeters of
21 lead. That was my question.

22 DR. BRABY: Certainly, 18 inches of
23 concrete far exceeds several millimeters of lead.

24 MR. HAIMBACH: And you have what? This
25 place is four feet of concrete so --

1 DR. RYGE: It's more than four feet in
2 the highest detection areas and a couple of feet pretty
3 much everywhere else.

4 MR. GEYER: And that's fine. My question
5 still is, does it address why you used concrete rather
6 than lead? Is there a paragraph or two or three or
7 four or a chapter on why that was done? That's my
8 question. Why did you all want that because I want to
9 make sure safe and can you're guaranteeing me that the
10 thickness of the concrete is equivalent to some of the
11 millimeters of lead and you said there are tables that
12 prove this and that was explained. My question is, is
13 that part of the environmental assessment and that
14 hasn't been answered.

15 DR. RYGE: Certainly the shielding is on
16 I believe -- I haven't seen the text of the
17 environmental assessment, but the input information we
18 provided certainly goes into that a great length, but
19 you're sort of implying that lead is the proper thing
20 to do and concrete is somehow immaterial.

21 MR. GEYER: I certainly don't know, sir.
22 My question is, concrete was chosen rather than lead so
23 that should be addressed as to why.

24 DR. HAIMBACH: And that's one of the
25 reasons for having this meeting. The environmental

1 assessment is currently a draft because the results of
2 this meeting are a part -- will be attached as
3 appendices to that environment assessment and so we can
4 take and ensure that that will be addressed in the
5 environmental assessment.

6 MR. GEYER: Thank you very much. The
7 last one of my questions. I believe this is it, no
8 promises. Why was El Paso selected as the testing site
9 for the PFNA, and the reason I asked this, I would be
10 interested in reviewing your environmental justice
11 section, due to the fact that El Paso has a very low
12 per capita income as largely as the Hispanic
13 population. I know that wasn't one of your topics and
14 I don't ask to be addressed now, in the environmental
15 assessments and I was wondering how you glossed over
16 that. The fact that we do have a very low per capita
17 income, largely Hispanic, why not the Canadian border
18 to test the use of gamma rays on this?

19 MR. HAIMBACH: Well, it's neutron based.
20 We already have gamma ray systems all over the border,
21 but that question -- and I'm going to take this one --
22 basically has three parts to it. For a large number --
23 or several, excuse me, of this non-radiation based,
24 nonintrusive inspection systems, the first prototype
25 has been tested at Ysleta and one of the reasons for

1 that has been that the cargos -- they have a sufficient
2 quantity and variability of cargo so that the studies
3 you're doing can give you meaningful results, without
4 impacting the operations of the port. As far as --
5 there have been assessments looking at a variety of
6 other possible sites and for -- those are the major
7 reasons why Ysleta has been selected as the place to
8 go. The last thing is in the congressional language
9 directing the agencies to perform this test, it
10 specifically directed us to you, the Ysleta Port of
11 Entry. And so that included both the things that have
12 been done in just looking and evaluating the utility of
13 this port as well as the direct mandate from Congress.

14 MR. GEYER: How did that get in there?
15 Is that our representatives who do that?

16 MR. HAIMBACH: Exactly who put it in
17 there --

18 MR. GEYER: Could you also put that in
19 your report?

20 DR. HAIMBACH: I believe that's already
21 mentioned in there, but if not, it will be. In the
22 congressional language.

23 MR. GEYER: What about the environmental
24 justice even though it wasn't congressional language
25 but, in fact, if it is, I'm just wondering, is that

1 addressed in your report?

2 MR. HAIMBACH: Yes.

3 MR. GEYER: Thoroughly? I would hope so.

4 MR. HAIMBACH: Yes. We're probably up
5 to, what? We're probably getting close to 250 pages.

6 MR. GEYER: As far as that section?

7 DR. HAIMBACH: I don't know the length of
8 this section, but your questions which have been -- we
9 not only heard your questions, I'm sure we'll get a
10 copy of it. We have a court reporter here so the
11 detailed -- you know, all the statements you've made
12 will be included as part of the environmental
13 assessment.

14 MR. GEYER: Thank you.

15 DR. HAIMBACH: Are there any other
16 questions that have come up at the process because I
17 don't want anybody to feel left out. We have a
18 gentleman here.

19 ADIANCE MEMBER: What are the by-products
20 generated by this process that were determined not to
21 be harmful to the air quality?

22 DR. BRABY: The primary concern is the
23 gas tritium that is hydrogens that contains two
24 neutrons. And that's a low energy atom emitter. It
25 turns out that because of the nature of atomic

1 structure, for every neutron that the facility produces
2 it also produces one atom of tritium and that tritium
3 is largely contained in the target assembly until the
4 target assembly is reprocessed, which should be done
5 somewhere else. But if the target assembly happened to
6 break at the site, then a certain amount of tritium
7 would be released into the atmosphere. It turns out,
8 again, to be roughly a factor of ten or lower than even
9 the most cautious EPA analysis of a -- for a hazardous
10 level. So it's well below any hazardous level. Even
11 if it outbreaks in a fashion, that would be extremely
12 unlikely.

13 DR. HAIMBACH: Any other questions? I
14 don't want to have anyone -- and then, Tom, can you
15 pick up that one last slide? When he gets the slide up
16 you will notice that right about in here there's an
17 e-mail address and if -- there's a time frame mentioned
18 so I'll wait for him to pick it up. If there are any
19 additional questions or concerns that you would like to
20 forward to us, that's a good place. When he gets it
21 up. Here we go, this one. We have an e-mail address
22 and a fax number and so during the next two weeks
23 because that's the time frame and then we'll need to
24 polish up the last aspects of the EA and so -- for
25 inclusion in the EA and that's the time frame we

1 need -- next week. Excuse me, next week so if there's
2 additional questions, and as everything else they will
3 be included in that appendix EA. The e-mail address is
4 jspacco@scainc.biz and the fax number is 410-593-9907.
5 Is there anyone who would like me to repeat that if
6 they didn't get it? Then, unless there's any other
7 questions, I'd like to thank you very much for coming
8 and good evening.

9 (Conference concluded at 8:38 p.m.)

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